



Low Impact Development Design Standards for the City of Salinas

Workshop No. 1

June 22, 2006



**California Environmental Protection Agency
CENTRAL COAST REGIONAL
WATER QUALITY CONTROL BOARD**

Kennedy/Jenks Consultants

Presentation Outline

- Workshop Goals
- Regulatory Framework
- Numeric Sizing Criteria
- LID and Treatment Control BMPs
- Project Objectives, Tasks and Schedule
- Public Outreach and Education Process
- Questions, Discussion & Next Steps

Workshop Goals

1. Explain NPDES permit requirements for new development and redevelopment
2. Discuss potential BMPs and applicability of Low Impact Development in Salinas
3. Discuss development of tools to assist with planning and implementation of LID
4. Obtain feedback from City staff, local development community and others

Regulatory Framework

- The Central Coast Regional Water Quality Control Board
 - Is the lead state agency that protects water quality in the Central Coast Region
- The Regional Board has authorities under:
 - The Federal Clean Water Act
 - California's Porter-Cologne Water Quality Control Act
 - The Central Coast Regional Water Quality Control Plan (Basin Plan)

Regulatory Framework

- Per Regional Board Order R3-2004-0135 the City of Salinas is required to:
 - Reduce the discharge of pollutants for the Municipal Separate Storm Sewer System (MS4) to the Maximum Extent Practicable (MEP)
- Per the December 22, 2005 Regional Board letter to the City of Salinas:
 - “Because Low Impact Development (LID) techniques are effective, feasible and economically practicable, they meet the MEP definition.”

Regulatory Framework

- Per Section III of Attachment 4 the City of Salinas is required to:
 - Minimize impacts on receiving waters from new development and significant redevelopment (5,000 ft² or more of new impervious surfaces)
 - Require developers to analyze pre- and post-project pollutant loads and peak flow rates and identify BMPs to be implemented
 - Describe BMPs in a Development Standards Plan
 - Review and condition for compliance all *priority project categories*

Best Management Practices (BMPs)

- Minimize amount and direct connection of impervious surfaces
- Infiltrate runoff on-site where appropriate
- Implement pollution prevention and source control measures
- Preserve, create or restore riparian corridors, wetlands and buffer zones
- Implement treatment controls where necessary

Salinas Development Standards Plan

- Shall include a list of recommended source and treatment control BMPs
- Shall include numeric sizing criteria for treatment control BMPs
- Shall consider pollutants and activities of concern
- Shall describe the implementation process
- Shall apply restrictions to infiltration devices to protect groundwater quality
- Shall address the potential for downstream erosion and degradation of stream habitat
- Shall identify necessary modifications to existing codes and ordinances and an implementation schedule

Priority Project Categories

1. Residential subdivisions with 10 or more units
2. Commercial developments that create 100,000 ft² or more impervious land area
3. Automotive repair shops ($\geq 5,000$ ft²)
4. Restaurants ($\geq 5,000$ ft²)
5. Hillside developments ($\geq 5,000$ ft²)
6. Parking lots ($\geq 5,000$ ft²)
7. Streets, roads, highways, and freeways that create 5 or more acres of pavement
8. Retail gasoline outlets ($\geq 5,000$ ft²)

Numeric Sizing Criteria

1. Volume-based treatment control BMPs shall be designed to infiltrate or treat either:
 - a) Volume produced by the 24-hour 85th percentile storm event (based on local rainfall records)
 - b) Maximized storm water quality capture volume (WEF/ASCE method, 1998)
 - c) 80% of the volume of annual runoff (CASQA method, 2003)

Examples of volume-based treatment control BMPs include extended detention and bioretention basins

Numeric Sizing Criteria

2. Flow-based treatment control BMPs shall be designed to infiltrate or treat either:

Maximum flow rate produced by a rain event equal to two times the 85th percentile hourly rainfall intensity based on local rainfall records (CASQA method, 2003)

Examples of flow-based treatment control BMPs include swales, sand filters, & vortex separators

3. An approved equivalent numeric sizing criteria may be used

Volume-based Treatment Control BMPs

Maximized storm water quality capture volume
(WEF/ASCE method, 1998)

$$C = 0.858i^3 - 0.78i^2 + 0.774i + 0.04$$

$$P_o = (aC)P_6$$

Where

C = the runoff coefficient

i = watershed imperviousness ratio

P_o = maximized detention volume (inches)

a = regression constant for BMP draw down time

P₆ = mean annual runoff-producing rainfall depth
based on local rainfall records (inches)

Volume-based Treatment Control BMPs

Maximized storm water quality capture volume
(WEF/ASCE method, 1998)

- BMP draw down time: 24 hours, $a = 1.582$
48 hours, $a = 1.963$
- The nearest long term rain gage noted in CASQA BMP Handbook is San Jose ($P_6 = 0.6$ inches)
- An analysis of local rainfall records will be conducted to determine P_6 for the City of Salinas
- Additional information can be found in Section 5.5 of the CASQA BMP Handbook for New Development and Redevelopment www.cabmphandbooks.com

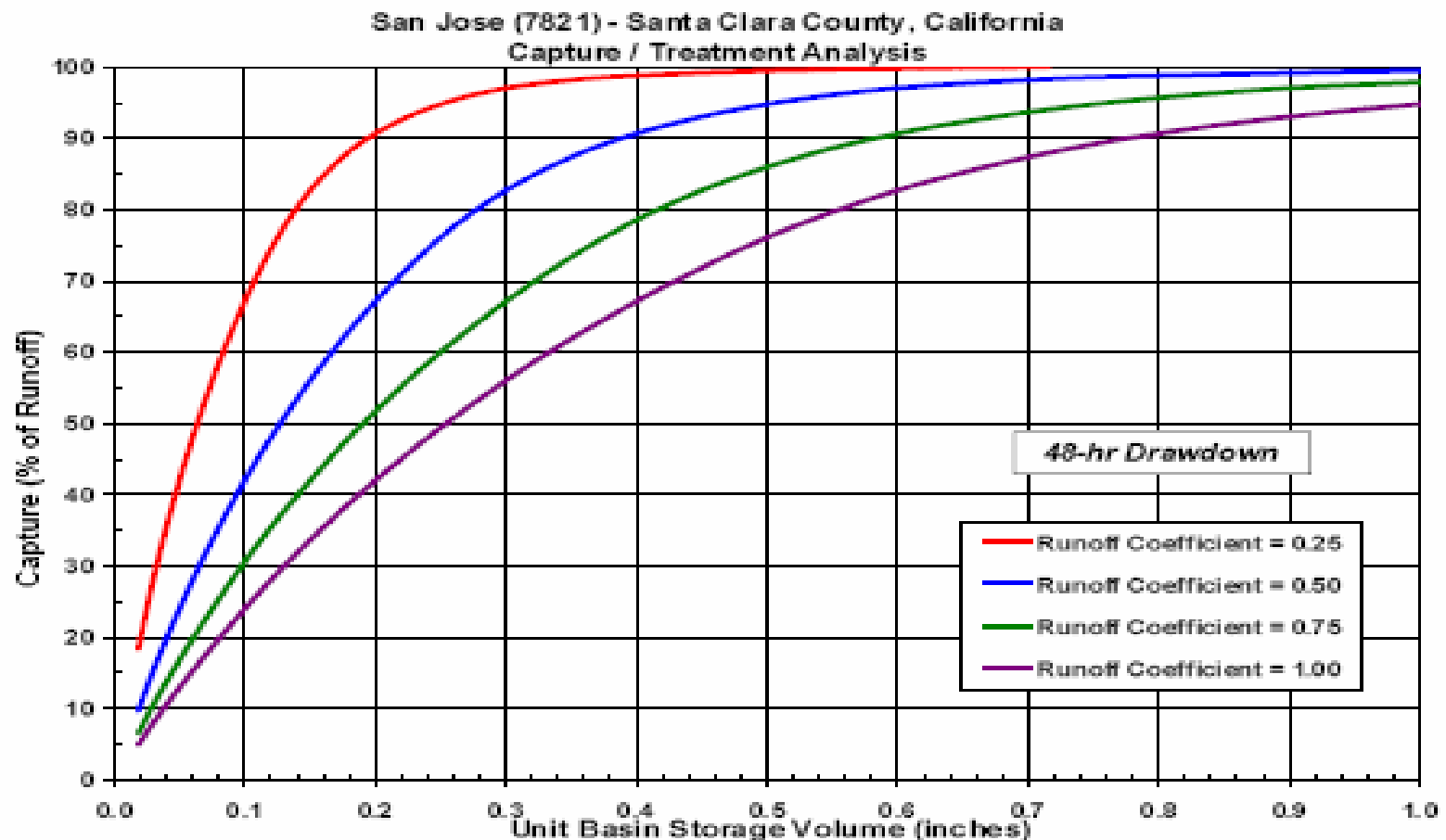
Volume-based Treatment Control BMPs

80% of the volume of annual runoff
(CASQA method, 2003)

1. Determine BMP drainage area (in ft²)
 2. Calculate composite runoff coefficient "C" (use Rational Method C values)
 3. Select the appropriate curve from Appendix D of the CASQA BMP Handbook (e.g. San Jose, 48-hr)
 4. Calculate required capture volume by multiplying BMP drainage area by Unit Basin Storage Volume
- Additional information www.cabmphandbooks.com

Volume-based Treatment Control BMPs

CASQA BMP Handbook Capture/Treatment Analysis Curves for San Jose, CA



Flow-based Treatment Control BMPs

Maximum flow rate produced by a rain event equal to two times the 85th percentile hourly rainfall intensity based on local rainfall records (CASQA method, 2003)

- This method utilizes the commonly applied Rational Formula: $Q = CiA$
- Per the CASQA BMP Handbook, the 85th percentile rainfall intensity (i) for San Jose is 0.10 inches/hour ($i \times 2 = 0.20$ inches/hour)
- An analysis of local rainfall records will be conducted to determine the 85th percentile rainfall intensity for the City of Salinas

Pollutants and Activities of Concern

- When selecting BMPs the Development Standards Plan shall consider:
 1. Target pollutants
 2. Pollutants associated with different land uses
 3. Post-development changes in flow rates and volumes
 4. Sensitivity of receiving waters to changes in flow rates and volumes

Pollutants and Activities of Concern

- Local Pollutants of Concern include:
 - Fecal Coliform and Nitrate (per 303(d) list)
 - TDS, Cl, CO₄, B and Na (per Water Quality Objectives for the Salinas River and the Gabilan Tributary - Central Coast Regional Water Quality Control Plan, 1994)
 - Sediment from construction sites

Infiltration and Groundwater Quality

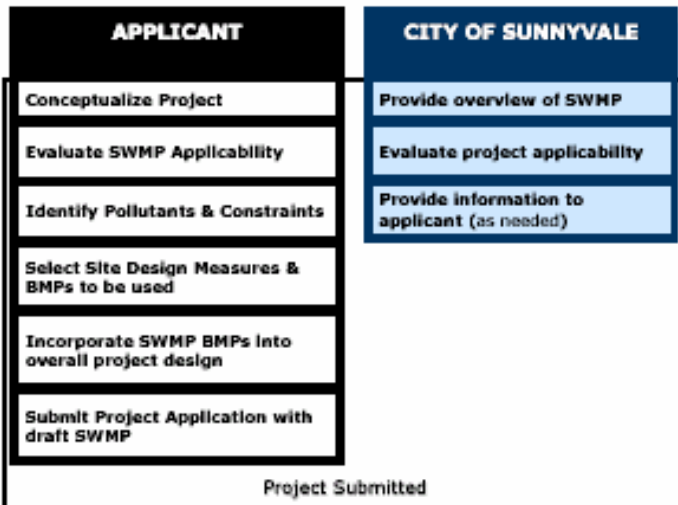
- Restrictions on infiltration devices may include the following:
 1. 150 ft or more from drinking water wells
 2. Not to be used at industrial or commercial sites with outdoor storage or materials and/or chemicals
 3. Native soil infiltration rates should be between 0.5 to 2.4 in/hr (120 to 25 min/in)
 4. When using infiltration basins and trenches, storm water should be pretreated prior to infiltration (e.g. with grassy swales)

Implementation Process

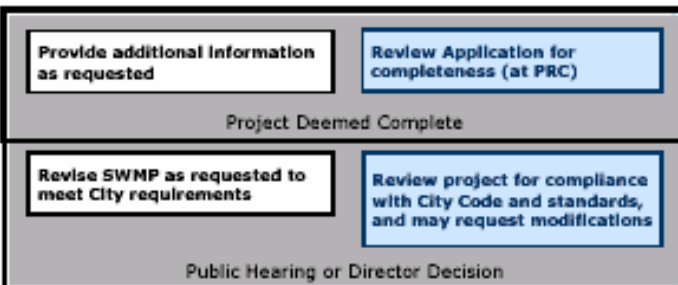
- The Salinas Development Standards Plan shall:
 1. Describe the implementation process (milestones and schedule)
 2. Identify roles and responsibilities of various City municipal departments
 3. Identify any other measures necessary for implementation

City of Sunnyvale Project Process Flow Chart

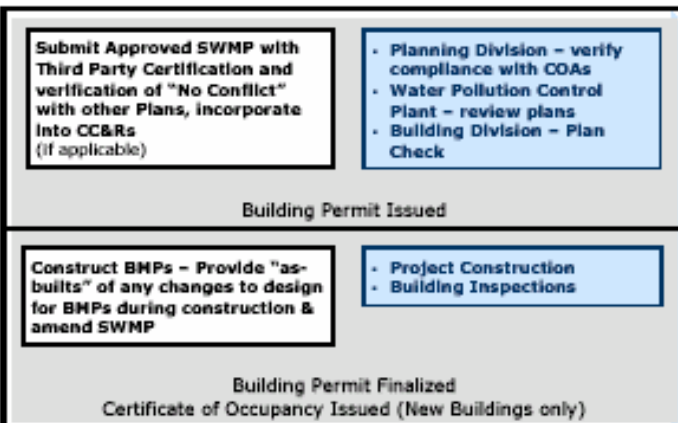
STEP 1: Project Development



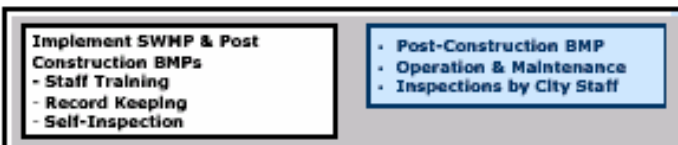
STEP 2: Planning Permit Process



STEP 3: Building Permit Process



STEP 4: Post Construction



Maintenance Agreement and Transfer

- The City of Salinas shall require verification of maintenance provisions for post-construction treatment control BMPs.
 1. Developer to maintain BMPs until legally transferred to another party; or
 2. Sales or lease agreement includes recipients requirements for maintenance; or
 3. Project conditions or CC&R's for residential developments assign maintenance responsibilities to HOA or other appropriate group; or
 4. Any other legally enforceable agreement

Other Regulatory Requirements

➤ The City of Salinas shall:

1. Incorporate into its CEQA process an evaluation of potential impacts from development on storm water runoff and receiving water bodies
2. Update its General Plan as necessary to include watershed and storm water quality and quantity considerations and policies
3. Provide annual training for development planning staff
4. Provide new development standards to developers as they are adopted

Waiver Program

- The City of Salinas may propose a waiver program that would require developers to transfer cost savings to a storm water mitigation fund subject to the following:
 1. Proof that the project will improve storm water quality and protect stream habitat
 2. Proof that treatment control BMPs are infeasible
 3. Approval of the Executive Officer

Any Questions??

